

Notification No. G. 6367—G. M. 276-07-2, dated 2nd May 1908.

The following Resolution No. 3252—3288-3, dated 27th March 1908, of the Government of India in the Department of Commerce and Industry, regarding the limitation of Telegraph work on Sundays, is hereby published for general information.

By Order,

K. MYLAR RAO,

For Secy. to Govt., Gen. & Rev. Depts.

No. 3252—3288-3.

TELEGRAPH DEPARTMENT.

Calcutta, the 27th March 1908.

The Government of India have had under their consideration an important recommendation made by the Telegraph Committee regarding the limitation of Telegraph work on Sundays. A Telegraph operator has at present to work regularly on Sundays as part of the ordinary routine of his service, and this liability to Sunday work is felt by the staff to be a substantial hardship. The Government of India are of opinion that the grievance is a real one, and although it is one which cannot be altogether removed, they are anxious to do what is possible to limit its extent. The interest which the public have shown in matters affecting the well-being of the Telegraph staff, leads Government to believe that they will willingly co-operate in any reasonable measure to ameliorate the conditions of service in the Telegraph Department.

2. Telegraph Offices are divided into three classes, first class offices which are open always, second class offices which are open for about fourteen hours, usually from 7 to 21, and third class offices which are open for seven or eight hours only. At present on Sundays and the four chief holidays, viz., Christmas day, New Year's day, Good Friday and King's Birthday, all first class offices are open as on week days; second class offices are usually open for two hours in the morning and five in the afternoon, and third class offices for two hours in the morning and two in the afternoon. The Telegraph Committee were of opinion that while first class offices should remain open from 0 hours to 0 hours, as at present, the working hours of second and third class offices might be considerably restricted. In particular they recommended that in places where there is more than one office, all offices other than the principal one should be entirely closed on Sundays and holidays.

3. The Government of India have ascertained that in the United Kingdom a considerable number of offices are open on Sundays, only for one hour in the morning, and the very great majority only are open in the morning. A few are also open for one hour in the evening, and only the most important offices are open throughout the day. It is the recognized practice, moreover, to keep open only the chief office in towns where there is more than one office. Although the Government of India are not prepared to adopt the English practice in its entirety, they nevertheless consider that it would be desirable that the existing Sunday hours in Indian Telegraph offices should, if possible, be reduced. The following detailed proposals to effect this purpose have been tentatively put forward by the Telegraph Department and the Post Office:—

- (1) That in places where there is more than one office, all offices except the principal one should ordinarily be closed; but that, in the case of a few of the largest towns, one or two of the minor offices which serve outlying localities should also be open for short periods.
- (2) That first class offices should remain open from 0 hours to 0 hours as at present except when the office is in a place where there is more than one office and is not itself the principal office.
- (3) That in places where there is only one office, and the office ordinarily observes second class hours or in places where there is more than one office and the principal office observes second class hours, it should be open in all cases for two hours in the morning (7 to 9) and in the case of the more important offices also for two hours in the evening (16 to 18).
- (4) That in places where there is only one office, the office, if it ordinarily observes third class hours, should be open for two hours only in the morning (7 to 9), and this period should be reduced to one hour in cases where experience shows that this further limitation is possible.

The Government of India, before issuing any orders on the subject, desire that the public, who will be affected by the change in the working hours, should have an opportunity of expressing their opinion.

4. The restriction of the hours of working of second and third class offices would substantially diminish the Sunday work of the Telegraph staff, but a further recommendation has been made by the Telegraph Committee, viz., that on Sundays and holidays inland telegrams at

the lowest rates, at present known as deferred, should not be accepted for transmission. Telegraph offices are kept open on Sundays because both in public and private business, questions arise which do not admit of delay and important interests would suffer if the Telegraph Service were not available. But it may be argued that it is not unreasonable that any person wishing to send a telegram on a Sunday should be called upon to guarantee the urgency of his business by paying the higher rates. The less urgent messages being eliminated, the volume of traffic would be very greatly reduced, and the staff would secure a substantial measure of relief.

5. The Government of India will finally consider the proposals enumerated in this Resolution at the end of the first week in May. They will be glad to receive before that date any representation on the subject which local Governments, public bodies, or private persons may desire to make.

ORDER.—Ordered that a copy of this Resolution be forwarded to all Local Governments and Administrations, to all Chambers of Commerce and Trades Association and to all departments of the Government of India. Ordered also that a copy be published in the *Gazette of India*.

THE WEAVING COMPETITIONS IN MADRAS.

Merits of the various looms.

During the last week of February and the first week of March, a Weaving Competition was held in Madras with the object of procuring definite data regarding the performances of the various types of hand-loom which are now offered to the Indian weaver. The response to the invitations to compete was very satisfactory, and every type of Indian made hand-loom that has been brought forward during the last few years was entered by those interested in its development to show what it was capable of. Fifty-one looms actually started work on the first day of the competition, all belonging to one or other of the following classes:—

1. Indigenous hand-loom.
2. Do. fitted with the fly-shuttle slay.
3. European hand-loom.
4. The Sayaji Cottage Loom, invented by R. to Bahadur Raoji B. Patel.
5. The Triumph Loom of the Salvation Army.
6. The Japanese Loom, as manufactured in Belgium.
7. The New Ahmednagar Loom invented by Mr. D. C. Churchill.

The competition did not, however, attract any of the imported looms which have recently been widely advertised as suited to Indian requirements. These looms are light power-loom which can be driven by hand, but experience seems to show that they are too heavy for the Indian weaver, who is usually a man of poor physique.

Terms of the Competitions.

The competitions were divided into two sections and in each section there were five classes. The first section was for indigenous hand-loom only, as it was recognised that it would be unfair to ask them to compete against the improved looms. They might have been left out altogether, but it was considered desirable to ascertain what work could be done on such looms under similar conditions to those under which the improved looms were worked. Data would thus be furnished showing the extent to which improvements have been effected. Although there are probably more than two and a half million indigenous hand-loom at work in the country, they have never been subjected to careful tests and the information available about them is all of the rough and ready order. In the second section all the improved looms competed one against the other, but unfortunately the different types of looms were not equally well represented. The Salvation Army only put forward two looms and Mr. Churchill only one, and even then he was unable to strictly comply with the conditions laid down.

The five competitions of each section were the same for both sections and were as follow:—

1. To weave cloth of 20s count in both warp and weft, width of cloth one yard. Number of ends per inch 48. Number of picks per inch 48.
2. To weave cloth of 60s count in both warp and weft, width of cloth from 45 to 54 inches. Number of ends per inch 72. Number of picks per inch 72.
3. To weave cloth of 100s count in both warp and weft, width of cloth from 45 to 54 inches. Number of ends per inch 80. Number of picks per inch 80.
4. To weave Madras handkerchiefs, 40s count in both warp and weft. Picks per inch 72. Ends per inch 72. Width one yard.
5. To weave Madras handkerchiefs, 60s count in warp and 40s in weft. Picks per inch 108. Ends per inch 80. Width one yard.

All the weaving was "plain" and could be done with two treadles, in the first three classes only grey yarn was to be used; but the two classes of Madras handkerchiefs were chequered coloured work involving frequent changing on the shuttle and careful attention to the beating up of the weft to produce a satisfactory result.

In the original programme of the competition work was to commence of Monday morning at 8 O'clock and to continue throughout the week ending on Saturday afternoon at 5-30 p.m. The weavers were to work 7 hours a day, or 42 hours in all. The end of February was specially selected for the competition as being the time when rain was least likely to fall and some of the sheds provided for the looms were not made water tight. The unexpected happened and several heavy showers fell on the first day of the competition and damaged a number of warps of the "pit" looms. After some discussion it was decided to go on and to arrange for a second competition in the following week, all the warps for which sheds were to be provided by the Local Committee were to be of as uniform quality as possible.

Looms that failed.

The results of the the competitions are given in the tabular statement below. In both competitions the Japanese hand-looms were withdrawn; and in the first the Salvation Army looms were withdrawn as it was found that the warps were unsatisfactory. It may here be remarked that the quality of warps which the competitors supplied themselves with varied very much and the output of the looms were greatly influenced thereby. Generally speaking the Madras competitors provided much better warps than those brought from other parts of India, and there seems to be but little doubt that in this important preliminary process to weaving practice in Southern India is far in advance of other Provinces. The results of the competition must be regarded as disappointing to those who are keenly interested in the re-suscitation of the hand-loom industry, as they disclose the fact that as yet none of the newly introduced looms can claim to be a substantial improvement on the best models of the old English hand-loom as manufactured in Madras and exhibited by the Government Weaving Factory at Salem and by Mr. P. Theagaroy Chetty. This result confirms the conclusions arrived at after long trials in the Salem Weaving Factory as recorded in the account of the work done at that institution which was presented to the Surat Industrial Conference. The improvement of the hand loom is no simple task, and it is fairly evident that those who have assayed to do so, with the single exception of Mr. D. C. Churchill, do not possess the requisite experience of weaving and knowledge of mechanics combined with the necessary inventive faculty to enable them to attain success. The failure of the English manufacturers is not due to lack of technical skill, for their looms are wonderfully ingenious pieces of mechanism, but to almost complete ignorance of the Indian weaver and the conditions under which he works. A power-loom to run successfully must be driven at a uniform speed, but if a man is employed to work it, the supply of power is most irregular and it is hopeless, therefore to expect that a lightly made power-loom will make a good hand-loom. To obtain good results from the fly-shuttle loom the weaver must exercise a high degree of skill, and his arms and legs must work in complete co-ordination. During the competition the best weavers were able to attain a maximum rate of 140 picks per minute and they seemed able to keep working at 100 picks a minute indefinitely. Yet, when the cloth was measured up, only in one instance was the average speed over 70 picks per minute; and generally, even with good weavers and fair warps, the efficiency of picking was below 50 per cent. This result is nevertheless twice as good as the average rate of picking which has hitherto been obtained from the weavers in the factory at Salem.

New Looms.

In all the new looms an attempt is made to reduce the number of independent operations to be made by the weaver. In the fly-shuttle loom they are three: (1) forming the shed by the action of the feet on the treadles, (2) throwing the shuttle by jerking the picker string with the right hand, (3) beating up the weft by the slay moved with the left hand. In the Sayaji loom and the Salvation Army loom the picking motion is worked off the slay and the operations of the weaver reduced to two. On narrow coarse cloth this system does not work badly. It is certainly easier for the weaver to apply the power; and though, during the competition, the weavers at these looms could not pick as fast as did the men at the European pattern of hand-loom, this was possibly due to the fact that they were less skilful. But for fine counts with a large number of ends to the inch and close picking, there is no doubt that these looms are inferior. As pointed out by Mr. Churchill in his paper on "The Hand-loom in Ahmednagar," the driving mechanism comes into operation too late, and there is a tendency while beating back to catch the shuttle before it has passed through the shed. In addition, to obtain sufficient power to drive the shuttle, the slay has to be moved rapidly forward and brought to rest suddenly. The action is somewhat violent and conducive to irregularities which cannot fail to damage the warp. The wider the loom the more violently must the slay be pushed back to give the shuttle sufficient impetus to cross the warp, whereas it is obvious that the reverse would be desirable.

Improved Mechanism.

This method of driving the shuttle was employed by Mr. Churchill in the first hand-loom he produced, but he has now definitely abandoned it in favour of an entirely new design in which the weaver supplies the power, looks after the warp, changes the shuttle, and the loom does the rest. It is thus essentially a power-loom, but it differs from all other power-looms inasmuch

as the rate of working is to some extent controlled by a spring, the action of which tends consequently to keep the weaver working at a uniform speed. This is undoubtedly a great advantage in a treadle-loom; and, as the mechanism is very light all the moving parts run on ball bearings. It is extremely easy to work, and the weaver is not unduly fatigued. As yet the loom has only been adjusted for coarse work; and when exhibited in Madras during the competition, it was said to run at about 135 picks per minute. During a day's run the effective average was 104 picks per minute. This is certainly an improvement on any other hand-loom, and it remains to be seen whether it can work equally well on fine counts and much wider cloth. Apparently there should be no difficulty in this extension of its sphere of practical utility, but it is possible that it will be necessary to make it remain mainly of iron to secure permanence in the somewhat delicate adjustments between the various parts. Wood is not a very satisfactory material for a comparatively delicate mechanism, as it is liable to warp and to crack and is affected by the amount of moisture in the atmosphere. It is undoubtedly an improvement on power-loom adapted to hand-weaving, and it will probably prove a success in hand-loom weaving factories, but in the hands of individual weavers, it may prove beyond their capacity to keep in working order.

Value of the fly-shuttle.

It has been advocated by some that in the present condition of hand-weaving in India, it would be wise to move slowly and be content in the first instance with getting the fly-shuttle slay adopted generally. The cost of the change would be small and the improvement in rate of weaving considerable. On this point the weaving competition yielded but little information, as there were only three such looms entered, and the rain unfortunately damaged the warps on two of them, and the enterprising Sholapur weaver who brought them down had to withdraw them. The third loom worked on a very fine warp of 100s counts and made an average of 36 picks per minute in the first test and 34.5 in the second. On the frame looms in the first competition the best average was 29.3 picks per minute, but in the second competition three weavers averaged, respectively, 48.3, 47 and 40 picks per minute. The difference in the two results is entirely due to variations in the quality of the warp, and the very excellent result obtained in the country loom fitted with a fly-shuttle slay is to be attributed mainly to the very superior warp.

The European hand-loom, apart from the use of the fly-shuttle, differs from the country loom in the fact that it is self contained in a frame and that the warp is deamed, and this process of beaming involves a considerable amount of extra labour preliminary to weaving. Practically the native weaver performs an equivalent operation at intervals during the process of weaving, instead of getting it all done beforehand. Deducting the time thus lost, there is no reason why he should not attain the same average rate of picking as is obtained in frame looms with beam warps. In the competition a number of what were styled "improved pit looms" were entered, which were in reality frame looms, the longitudinal members of which were dispensed with by embedding the posts of the front and back frames very firmly in the ground. The system possesses the merit of cheapness, but the looms are in essentials frame looms. When allowance has been made for the labour expended in beaming, it is by no means definitely proved that the frame looms may turn out more cloths than can be manufactured in the same time on country looms with fly-shuttle slays. The quality of the work, however better and, as the frame loom can be fitted with an automatic take-up motion, great regularity in picking can easily be ensured. In all the classes of the competition devoted to plain weaving, the advantage derived from the employment of a take-up motion was very evident.

Some comparisons.

A detailed scrutiny of the tabulated results of the competition reveals some very useful information. First as the ratio of the work done on fly-shuttle looms and on country looms. The latter did not attempt the finest warps, but on those of 60s counts the best result was 17.5 picks per minute on cloth 43 inches wide; against 69.5 picks per minute on cloth 51.5 inches wide. That is, more than four times as much cloth was turned out. With warps of 20s counts and one yard wide, the ratio is 2.5, whilst on the Madras handkerchiefs it is only 1.35. In this case it is probable that the low ratio is partly due to the superior skill of the weavers on the country looms, but for the most part the frequent changing of shuttles discounts the advantage of the latter method of picking. The wider the cloth the greater the gain due to the use of the fly-shuttle; and, in very wide work, such as turban cloths which are 9 feet wide, one weaver can easily work a fly-shuttle loom much faster than two men on a country loom. The results of the competition establish the fact that there is a great but variable degree of advantage in the use of the fly-shuttle. Roughly it may be taken as three to one.

The looms which did the best all round work in the competitions were those manufactured in Madras on the lines of the old English hand-loom. In the second competition, with counts of 100s the average rate of picking of the three best looms was 45 per minute, against 23 per minute in the single Sayaji Cottage loom which competed. With 60s counts of four looms

averaged 55 picks per minute against 50.5 obtained in the Salvation Army loom and 36 in the Sayaji Cottage loom. With counts of 20s one of the looms from the Salem Weaving Factory averaged 63 picks per minute in both competitions, against 35 by the Sayaji Cottage loom and 37 by the Salvation Army loom. In the first competition a loom from Bengal of the Serampore pattern averaged 73 picks per minute with 42 ends to the inch; but in the second competition, working with a new reed with 52 ends to the inch, only 37 picks per minute were obtained. This result may have been due to differences in the quality of the warp, but the increase in the number of ends per inch also had much to do with it.

Results of the Competitions.

In reviewing the results of these competitions the question naturally arises—has the information been obtained that was sought for and, if so, what use can be made of it? Some valuable data have undoubtedly been collected which could have been obtained in no other way; but the conclusions deduced from them in the preceding paragraphs will by some scarcely be accepted as final. Those who competed had no preliminary arrangements, might have been greatly improved upon, so that the inventors of the new looms have gone away dissatisfied with themselves and still of opinion that their looms would have done better had things been otherwise. That the quality of warps exerted a pronounced influence on the results obtained with the looms is not to be disputed, and points to the necessity of greater attention to this preliminary process. It is fortunate, however, that a second competition was held when the warps supplied were of more uniform quality, and the results, therefore, more strictly comparable. As a final test of the merits of the different looms, the competitions have proved satisfactory, and we may claim now to be in a position to state definitely what type of loom may be best employed on a specified kind of work. In the paper on the Salem Weaving Factory already alluded to, figures are given as to the average output of the weavers in that factory and a comparison with those obtained in the competition shows that when a sufficient stimulus is employed, the weaver can without fatigue turn out more than twice as much work as he is willing to do at Salem even when working on liberal piece-work rates. If the Salem weavers would work at the same rate in the factory that they did during the competitions, there would be a good profit on the capital invested. Between the best of the competing looms the differences in output of coarse work are not much greater than would be expected where so much depends upon the skill of the weaver, but for fine work the old English hand loom is unquestionably superior.

The Churchill Loom.

Looking as the writer does, to the development of hand loom weaving factories as the most desirable and the most probable solution of the Indian weaving problem, it must be confessed that the new loom invented by Mr. Churchill is an impediment to any immediate advance in this direction and yet a promise of their ultimate establishment. The loom possesses many valuable features, but it requires time and money to be spent on perfecting them. Apparently Mr. Churchill is not in a position to give his whole time to his loom, and the Missionary Society with which he is connected is unable to furnish him with the funds. As the loom is not patented, and its early completion would be of immense advantage to the hand loom industry, the provision of the pecuniary assistance can be confidently recommended as a way to contribute to the industrial development of the country second to none at the present time. With the possibility of such a loom being on the market in a year or two the capitalist would scarcely be likely to invest a large amount of money in any of the existing types of looms. The Churchill Loom promises twice the output of any other loom capable of being worked by Indian weavers, but it is hardly likely that in its final form it will be a suitable loom for weavers working independently. With an output that may be reckoned as six times that of the indigenous hand loom, special arrangements for warping will be necessary, and they will have to be supplied by a central factory even if the loom be worked in a weaver's house. A lakh or two devoted to the complete working out of all the details of this loom and the demonstration of its advantages to the weaving world would be well applied. It certainly seems a pity that ample opportunity should be denied Mr. Churchill to bring to early maturity an invention which holds out so much promise.

Madras Weaving Competitions.

Serial No.	Description of loom			First Competition					Second Competition				
		Ends per inch	Counts of warp and weft	Average picks per inch	Length woven	Hours worked	Width of cloth	Average picks per minute	Average picks per inch	Length woven	Hours worked	Width of cloth	Average picks per minute
Class I.													
4	Frame loom ...	80	100 ^s	70½	44'-7"	42½"	52½"	16	85	57'-11"	24½	48"	40
25	Improved pit loom ...	...	...	798	43'-24"	...	51½"	16½	95½	60'-9"	...	48"	47
13	Frame loom ...	82	...	85·2	73'-1"	...	54"	29½	80½	74'-5"	...	54"	45½
14	Do ...	...	...	87	47'-11"	...	55"	19½	92½	32'-8"	...	...	34½
41	Country loom with fly shuttle slay.	...	...	75·8	92'-11"	39	46"	36	82	51'-5½"	...	48"	34½
31	Sayaji Cottage loom ...	80	...	..	...	...	...	..	79	44'-4"	...	...	28
Class II.													
1	Frame loom ...	72½	60 ^s	73·9	172'-11"	42½	51½"	40	70½	120'-7"	...	48½"	60½
28	Improved pit loom ...	...	...	71·5	141'-6"	...	50½"	47½	71½	90'-9"	...	48"	5½
16	Frame loom ...	...	...	73·8	128'-2"	...	53½"	44½	71	94'-6"	...	53½"	5
18	Do ...	...	...	71	97'-5½"	...	53"	30½	69½	86'-8"	...	...	49½
39	Country loom with fly shuttle slay...	82	...	...	...	...	...	...	68	83'-11"	...	58½"	46½
20	Salvation Army ...	74	...	...	...	...	...	...	61½	101'-11"	...	42½"	50½
35	Sayaji Cottage loom ...	72	...	...	...	...	...	...	66	66'-8"	...	46½"	35½
42	Country loom ...	85	...	76	49'-2"	42½	43"	17½	...	...	...	...	...
43	Do ...	80	...	73½	34'-10"	...	39½"	12	...	...	...	...	...
Class III.													
8	Frame loom ...	52	20 ^s	50·5	296'	40½	33"	73	47	83'-2"	21	32"	37½
9	Do ...	...	...	49	118'-10½"	42½	46½"	27½	43	83'-3½"	24½	35"	29½
5	Do ...	48	...	51½	205'-9½"	...	36"	50	44½	122'-5"	24½	36"	44½
22	Improved pit loom ...	...	...	46	218'-8"	...	36"	47½	40	138'-3"	...	37½"	45
34	Sayaji Cottage loom ...	50	20 ^s	...	...	...	...	...	41½	103'-6"	...	36"	35
21	Salvation Army ...	52	...	...	...	...	...	...	39	116'-11"	...	35"	37
17	Frame loom ...	48	...	43½	309'-9"	42½	36"	63½	46½	104'-7"	...	35½"	62½
36	Country loom ...	48	...	44½	95'-2"	34	35'	25	44½	79'-7"	23½	86"	30½
46	Do ...	50	...	...	...	...	...	...	47½	75'	24½	35"	29½
49	Do ...	68	...	...	...	...	...	...	58½	47'-4"	24½	27"	22½
Class IV.													
MADRAS HANDEKERCHIEFS.													
2	Frame loom ...	84	60×40	101½	58'-11½"	42½	36"	28	109	42'-3"	24½	37"	37
26	Improved pit loom ...	84	..	101	47'-3"	...	37"	22	107½	44'-7½"	..	36"	39½½
19	Frame loom ...	84	...	63½	27'-5"	...	34½"	8½	75½	21'-11½"	...	34"	13½
33	Sayaji Cottage loom ...	82	...	...	...	...	...	...	86½	20'-6"	..	36"	20½½
23	Country loom ...	80	...	105½	34'-3"	42½	36½"	17	117½	23'-9"	...	7½"	27½
24	Do ...	...	...	112½	33'-7"	...	37½"	18	122	25'-4½"	...	37"	25
44	Do ...	81	...	114	18'-8½"	20	38"	21½	117	29'-6"	...	37½"	26
45	Do. ...	86	..	113	24'-10"	34	37½	16	117	19'-4"	...	38"	18½
Class V.													
MADRAS HANDEKERCHIEFS.													
3	Frame loom ...	68	40×40	87½	96'-6"	42½	37"	40	83½	64'-6"	...	36"	44
27	Improved pit loom ...	68	40×40	88	91'-10½"	...	36½"	38	80½	56'-16"	...	37"	41½
32	Sayaji Cottage loom ...	74	...	...	...	...	...	..	58	55'-8"	...	36"	26½